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| APPLICATION NO | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO | CONFIRMATION NO |
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| 09/976,946 | 10/12/2001 | Richard A. Hicks | FCI-2642 C2285A | 2569 |

7590 09/10/2003

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46th Floor
One Liberty Place
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| EXAMINER | |
|---|---|
| LEE, BENNY T | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2817 | |

DATE MAILED: 09/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

09/976,946

UNITED STATES DEPARTMENT OF COMMERCE
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| SERIAL NUMBER | FILING DATE | FIRST NAMED APPLICANT | ATTORNEY DOCKET NO. |
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| EXAMINER | |
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| ART UNIT | PAPER NUMBER |
| | 13 |

DATE MAILED:

This is a communication from the examiner in charge of your application.

COMMISSIONER OF PATENTS AND TRADEMARKS

☐ This application has been examined ☑ Responsive to communication filed on 12 June 2002 ☑ This action is made final.

A shortened statutory period for response to this action is set to expire three (3) month(s), ~~_____ days~~ from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. ~~35 U.S.C. 133~~

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☐ Notice of References Cited by Examiner, PTO-892.
2. ☐ Notice re Patent Drawing, PTO-948.
3. ☐ Notice of Art Cited by Applicant, PTO-1449
4. ☐ Notice of Informal Patent Application, Form PTO-152
5. ☐ Information on How to Effect Drawing Changes, PTO-1474
6. ☐ _____

Part II SUMMARY OF ACTION

1. ☑ Claims 1, 3-5, 16-31 are pending in the application.
   Of the above, claims _____ are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☑ Claims 29, 30, 31 are allowed.
4. ☑ Claims 1, 3-5, 17, 19-21, 23, 28 are rejected.
5. ☑ Claims 16, 18, 22, 24-27 are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings which are acceptable for examination purposes until such time as allowable subject matter is indicated.
8. ☐ Allowable subject matter having been indicated, formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. These drawings are ☐ acceptable; ☐ not acceptable (see explanation).
10. ☐ The ☐ proposed drawing correction and/or the ☐ proposed additional or substitute sheet(s) of drawings, filed on _____ has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved. ☐ disapproved (see explanation). However, the Patent and Trademark Office no longer makes drawing changes. It is now applicant's responsibility to ensure that the drawings are corrected. Corrections MUST be effected in accordance with the instructions set forth on the attached letter "INFORMATION ON HOW TO EFFECT DRAWING CHANGES", PTO-1474.
12. ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

TOL-326 (Rev. 7-82) EXAMINER'S ACTION

SN 976946

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 5, 17, 19, 20, 21, 23, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barnett et al and the Butterweck paper (both of record) taken in combination.

Barnett et al (fig. 1) discloses a multi-layer (i.e. ceramic laminate) printed circuit board substrate (8 at col 5, ls 6, 7) having a waveguide having walls (12, 14, 16) and an air filled waveguide (20) disposed thereon.

Butterweck (fig. 5) discloses a waveguide comprised of first and second "C" shaped channels configured such that a gap is formed along the axis of the waveguide. The gap within the waveguide configuration functions as a mode filter permitting the fundamental order mode (i.e. $H_{1,0}$ mode) to propagate within the waveguide while preventing higher order (i.e. $H_{m,0}$, where m is not equal to 1, and preferably is even) modes from propagating within the waveguide.

Barnett et al differs from the claimed invention in that it lacks the specific waveguide having the gap, while Butterweck discloses the waveguide with the gap but does not disclose that the waveguide is supported by a substrate.

Accordingly, it would have been obvious to have combined the teachings from each reference to have provided a waveguide configuration having a waveguide with a gap being

supported by a substrate. Such a modification would have been considered obvious since it would have provided the advantageous benefit of a waveguide with a gap to prevent higher order mode propagation (as taught by Butterweck) being formed in an integral manner on a substrate (as taught by Barnett et al), thereby suggesting the obviousness of such a combination.

The waveguide of the above combination, being an electromagnetic wave propagating medium, inherently must include ends thereof connected respectively to a transmitter (for waveguide) and a receiver (for receiving the waves propagated through the waveguide).

Claims 3, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the preceding rejection as applied to claim 1 above, and further in view of Ishikawa et al (of record).

Ishikawa et al discloses that there are certain applications for such waveguides (i.e. satellite, mobile). Accordingly, for such satellite or mobile applications, obviously use of transceivers for providing the transmit and/or receive functions would have provided a desired optimization for such a transmit and/or receive functions, thereby suggesting the obviousness of such a modification. Furthermore, inherent within any transceiver would have been a "modem" as would have been known to those of ordinary skill in the art.

Applicant's arguments filed 12 June 2003 have been fully considered but they are not persuasive.

Applicant has advanced the argument that the Butterweck reference teaches *resistive* sidewalls as contrasted with the *conductive* sidewall as recited in the amended claims. Moreover applicant further asserts that Butterweck *teaches away* from the embodiments recited in

independent claim 1 and that any reference having conductive side walls would not be combinable with Butterweck and would have destroyed Butterweck intended function.

Contrary to applicant's assertion, it should be noted that the combination with Butterweck as set forth in the above rejections is properly combinable and would not have destroyed the function of Butterweck. It should be noted that any combination with Butterweck would have intrinsically included the resistive sidewalls associated with fig. 5 of Butterweck. Even with the resistive walls of Butterweck associated with the combination, the amended claims would still have been met. Note that in Butterweck, at page 278, left hand column, lines 1-4, the description indicates that "the wall impedance $Z_w$" (i.e. the resistive wall impedance) "is so small that the transverse field distribution in the waveguide does not deviate from that of the ideal guide" (emphasis added). In other words, is accordance with the teachings of Butterweck, the resistive sidewalls (i.e. whether in Butterweck or in the combination with Barnett et al) are of such a small impedance to have been considered "conductive" (i.e. in the same manner as in a conventional or "ideal" waveguide with all conductive walls). Accordingly, even with the "resistive" sidewalls as a part of the combination with Barnett et al, the nature of such "resistive" sidewalls as taught by Butterweck (i.e. low impedance as to be almost "ideal", for all intents and purposes, would have been compatible with such "conductive" (i.e. low impedance) sidewalls in Barnett et al, and thus the combination of references in the above combination would have been proper.

Claims 16, 18, 22, 24-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 29, 30, 31 are allowable over the prior art of record.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benny Lee whose telephone number is (703) 308 4902.

Benny Lee

B. Lee

September 5, 2003